Network Working Group D. Throop
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SNMP MIB extension for Multiprotocol Interconnect over X.25

Status of this Memo

This RFC specifies an IAB standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "IAB Official Protocol Standards" for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing Multiprotocol Interconnect (including IP) traffic carried over X.25. The objects defined here, along with the objects in the "SNMP MIB extension for the Packet Layer of X.25"[8], "SNMP MIB extension for LAPB"[7], and the "Definitions of Managed Objects for RS-232-like Hardware Devices" [6], combine to allow management of the traffic over an X.25 protocol stack.

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1. The Network Management Framework

The Internet-standard Network Management Framework consists of three components. These components give the rules for defining objects, the definitions of objects, and the protocol for manipulating objects.

The network management framework structures objects in an abstract information tree. The branches of the tree name objects and the leaves of the tree contain the values manipulated to effect management. This tree is called the Management Information Base or MIB. The concepts of this tree are given in STD 16, RFC 1155, "The Structure of Management Information" or SMI [1]. The SMI defines the trunk of the tree and the types of objects used when defining the leaves. STD 16, RFC 1212, "Towards Concise MIB Definitions" [3], defines a more concise description mechanism that preserves all the principals of the SMI.

The core MIB definitions for the Internet suite of protocols can be found in STD 17, RFC 1213 [4], "Management Information Base for Network Management of TCP/IP-based internets".

STD 15, RFC 1157 [2] defines the SNMP protocol itself. The protocol defines how to manipulate the objects in a remote MIB.

The tree structure of the MIB allows new objects to be defined for the purpose of experimentation and evaluation.

2. Objects

The definition of an object in the MIB requires an object name and type. Object names and types are defined using the subset of Abstract Syntax Notation One (ASN.1) [5] defined in the SMI [1]. Objects are named using ASN.1 object identifiers, administratively assigned names, to specify object types. The object name, together with an optional object instance, uniquely identifies a specific instance of an object. For human convenience, we often use a textual string, termed the descriptor, to refer to objects.

Objects also have a syntax that defines the abstract data structure corresponding to that object type. The ASN.1 language [5] provides the primitives used for this purpose. The SMI [1] purposely restricts the ASN.1 constructs which may be used for simplicity and ease of implementation.

2.1. Format of Definitions

Section 4 contains the specification of all object types contained in this MIB module. The object types are defined using the conventions defined in the SMI, as amended by the extensions specified in "Towards Concise MIB Definitions" [3].

3. Overview

3.1. Scope

Instances of the objects defined below provide management information for Multiprotocol Interconnect traffic on X.25 as defined in RFC 1356 [9]. That RFC describes how X.25 can be used to exchange IP or network level protocols. The multiprotocol packets (IP, CLNP, ES-IS, or SNAP) are encapsulated in X.25 frames for transmission between nodes. All nodes that implement RFC 1356 must implement this MIB.

The objects in this MIB apply to the software in the node that manages X.25 connections and performs the protocol encapsulation. A node in this usage maybe the end node source or destination host for the packet, or it may be a router or bridge responsible for forwarding the packet. Since RFC 1356 requires X.25, nodes that implement RFC 1356 must also implement the X.25 MIB, RFC 1382.

This MIB only applies to Multiprotocol Interconnect over X.25 service. It does not apply to other software that may also use X.25 (for example PAD). Thus the presence, absence, or operation of such software will not directly affect any of these objects. (However connections in use by that software will appear in the X.25 MIB).

3.2. Structure of MIB objects

The objects of this MIB are organized into three tables: the mioxPleTable, the mioxPeerTable, and the mioxPeerEncTable. All objects in all tables are mandatory for conformance with this MIB.

The mioxPleTable defines information relative to an interface used to carry Multiprotocol Interconnect traffic over X.25. Such interfaces are identified by an ifType object in the Internet-standard MIB [4] of ddn-x25 or rfc877-x25. Interfaces of type ddn-x25 have a self contained algorithm for translating between IP addresses and X.121 addresses. Interfaces of type rfc877-x25 do not have such an algorithm. Note that not all X.25 Interfaces will be used to carry Multiprotocol Interconnect traffic. Those interfaces not carrying such traffic will not have entries in the mioxPleTable. The entries in the mioxPleTable are only for interfaces that do carry Multiprotocol Interconnect traffic over X.25. Entries in the mioxPleTable are indexed by ifIndex to make it easy to find the mioxPleTable entry for an interface.

The mioxPeerTable contains information needed to contact an X.25 Peer to exchange packets. This includes information such as the X.121 address of the peer and a pointer to the X.25 call parameters needed to place the call. The instance identifiers used for the objects in

this table are independent of any interface or other tables defined outside this MIB. This table contains the ifIndex value of the X.25 interface to use to call a peer.

The mioxPeerEncTable contains information about the encapsulation type used to communicate with a peer. This table is an extension of the mioxPeerTable in its instance identification. Each entry in the mioxPeerTable may have zero or more entries in this table. This table will not have any entries that do not have correspondent entries in mioxPeerTable.

4. Definitions

```
MIOX25-MIB DEFINITIONS  ::= BEGIN

IMPORTS
        Counter,
        TimeTicks
                FROM RFC1155-SMI
        OBJECT-TYPE
                FROM RFC-1212
        DisplayString, transmission,
        ifIndex
                FROM RFC1213-MIB
        InstancePointer
                FROM RFC1316-MIB
        X121Address
                FROM RFC1382-MIB
        PositiveInteger
                FROM RFC1381-MIB;

                -- IP over X.25 MIB

miox    OBJECT IDENTIFIER ::= { transmission 38 }

mioxPle         OBJECT IDENTIFIER ::= { miox 1 }
mioxPeer        OBJECT IDENTIFIER ::= { miox 2 }

-- ###########################################################
--              Ple Table
-- ###########################################################

-- Systems that implement RFC 1356 must also implement
-- all objects in this group.

mioxPleTable    OBJECT-TYPE
        SYNTAX  SEQUENCE OF MioxPleEntry
```

```
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "This table contains information relative to
                        an interface to an X.25 Packet Level Entity
                        (PLE)."
                ::= { mioxPle 1   }

        mioxPleEntry    OBJECT-TYPE
                SYNTAX  MioxPleEntry
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "These objects manage the encapsulation of
                        other protocols within X.25."
                INDEX { ifIndex }
                ::= { mioxPleTable 1 }

        MioxPleEntry ::= SEQUENCE {
                mioxPleMaxCircuits
                        INTEGER,
                mioxPleRefusedConnections
                        Counter,
                mioxPleEnAddrToX121LkupFlrs
                        Counter,
                mioxPleLastFailedEnAddr
                        OCTET STRING,
                mioxPleEnAddrToX121LkupFlrTime
                        TimeTicks,
                mioxPleX121ToEnAddrLkupFlrs
                        Counter,
                mioxPleLastFailedX121Address
                        X121Address,
                mioxPleX121ToEnAddrLkupFlrTime
                        TimeTicks,
                mioxPleQbitFailures
                        Counter,
                mioxPleQbitFailureRemoteAddress
                        X121Address,
                mioxPleQbitFailureTime
                        TimeTicks,
                mioxPleMinimumOpenTimer
                        PositiveInteger,
                mioxPleInactivityTimer
                        PositiveInteger,
                mioxPleHoldDownTimer
                        PositiveInteger,
                mioxPleCollisionRetryTimer
```

```
                PositiveInteger,
        mioxPleDefaultPeerId
                InstancePointer
        }

    mioxPleMaxCircuits OBJECT-TYPE
        SYNTAX  INTEGER (0..2147483647)
        ACCESS  read-write
        STATUS  mandatory
        DESCRIPTION
                "The maximum number of X.25 circuits that
                can be open at one time for this interface.
                A value of zero indicates the interface will
                not allow any additional circuits (as it may
                soon be shutdown).  A value of 2147483647
                allows an unlimited number of circuits."
        ::= { mioxPleEntry 1 }

    mioxPleRefusedConnections OBJECT-TYPE
        SYNTAX  Counter
        ACCESS  read-only
        STATUS  mandatory
        DESCRIPTION
                "The number of X.25 calls from a remote
                systems to this system that were cleared by
                this system.  The interface instance should
                identify the X.25 interface the call came in
                on."
        ::= { mioxPleEntry 2 }

    mioxPleEnAddrToX121LkupFlrs OBJECT-TYPE
        SYNTAX  Counter
        ACCESS  read-only
        STATUS  mandatory
        DESCRIPTION
                "The number of times a translation from an
                Encapsulated Address to an X.121 address
                failed to find a corresponding X.121
                address.  Encapsulated addresses can be
                looked up in the mioxPeerTable or translated
                via an algorithm as for the DDN.  Addresses
                that are successfully recognized do not
                increment this counter.  Addresses that are
                not recognized (reflecting an abnormal
                packet delivery condition) increment this
                counter.

                If an address translation fails, it may be
```

```
                        difficult to determine which PLE entry
                        should count the failure.  In such cases the
                        first likely entry in this table should be
                        selected.  Agents should record the failure
                        even if they are unsure which PLE should be
                        associated with the failure."
                ::= { mioxPleEntry 3 }

        mioxPleLastFailedEnAddr OBJECT-TYPE
                SYNTAX  OCTET STRING (SIZE(2..128))
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The last Encapsulated address that failed
                        to find a corresponding X.121 address and
                        caused mioxPleEnAddrToX121LkupFlrs to be
                        incremented.  The first octet of this object
                        contains the encapsulation type, the
                        remaining octets contain the address of that
                        type that failed.  Thus for an IP address,
                        the length will be five octets, the first
                        octet will contain 204 (hex CC), and the
                        last four octets will contain the IP
                        address.  For a snap encapsulation, the
                        first byte would be 128 (hex 80) and the
                        rest of the octet string would have the snap
                        header."
                ::= { mioxPleEntry 4 }

        mioxPleEnAddrToX121LkupFlrTime OBJECT-TYPE
                SYNTAX  TimeTicks
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The most recent value of sysUpTime when the
                        translation from an Encapsulated Address to
                        X.121 address failed to find a corresponding
                        X.121 address."
                ::= { mioxPleEntry 5 }


        mioxPleX121ToEnAddrLkupFlrs OBJECT-TYPE
                SYNTAX  Counter
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The number of times the translation from an
                        X.121 address to an Encapsulated Address
```

```
                        failed to find a corresponding Encapsulated
                        Address.  Addresses successfully recognized
                        by an algorithm do not increment this
                        counter.  This counter reflects the number
                        of times call acceptance encountered the
                        abnormal condition of not recognizing the
                        peer."
                ::= { mioxPleEntry 6 }

        mioxPleLastFailedX121Address OBJECT-TYPE
                SYNTAX  X121Address
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The last X.121 address that caused
                        mioxPleX121ToEnAddrLkupFlrs to increase."
                ::= { mioxPleEntry 7 }

        mioxPleX121ToEnAddrLkupFlrTime OBJECT-TYPE
                SYNTAX  TimeTicks
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The most recent value of sysUpTime when the
                        translation from an X.121 address to an
                        Encapsulated Address failed to find a
                        corresponding Encapsulated Address."
                ::= { mioxPleEntry 8 }

        mioxPleQbitFailures OBJECT-TYPE
                SYNTAX  Counter
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The number of times a connection was closed
                        because of a Q-bit failure."
                ::= { mioxPleEntry 9 }

        mioxPleQbitFailureRemoteAddress OBJECT-TYPE
                SYNTAX  X121Address
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The remote address of the most recent
                        (last) connection that was closed because of
                        a Q-bit failure."
                ::= { mioxPleEntry 10 }
```

```
        mioxPleQbitFailureTime OBJECT-TYPE
                SYNTAX  TimeTicks
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The most recent value of sysUpTime when a
                        connection was closed because of a Q-bit
                        failure.  This will also be the last time
                        that mioxPleQbitFailures was incremented."
                ::= { mioxPleEntry 11 }

        mioxPleMinimumOpenTimer OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The minimum time in milliseconds this
                        interface will keep a connection open before
                        allowing it to be closed.  A value of zero
                        indicates no timer."
                DEFVAL { 0 }
                ::= { mioxPleEntry 12 }

        mioxPleInactivityTimer OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The amount of time time in milliseconds
                        this interface will keep an idle connection
                        open before closing it.  A value of
                        2147483647 indicates no timer."
                DEFVAL { 10000 }
                ::= { mioxPleEntry 13 }

        mioxPleHoldDownTimer    OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The hold down timer in milliseconds.  This
                        is the minimum amount of time to wait before
                        trying another call to a host that was
                        previously unsuccessful.  A value of
                        2147483647 indicates the host will not be
                        retried."
                DEFVAL { 0 }
                ::= { mioxPleEntry 14 }
```

```
        mioxPleCollisionRetryTimer OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The Collision Retry Timer in milliseconds.
                        The time to delay between call attempts when
                        the maximum number of circuits is exceeded
                        in a call attempt."
                DEFVAL { 0 }
                ::= { mioxPleEntry 15 }


        mioxPleDefaultPeerId OBJECT-TYPE
                SYNTAX  InstancePointer
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "This identifies the instance of the index
                        in the mioxPeerTable for the default
                        parameters to use with this interface.

                        The entry identified by this object may have
                        a zero length Encapsulation address and a
                        zero length X.121 address.

                        These default parameters are used with
                        connections to hosts that do not have
                        entries in the mioxPeerTable.  Such
                        connections occur when using ddn-x25 IP-X.25
                        address mapping or when accepting
                        connections from other hosts not in the
                        mioxPeerTable.

                        The mioxPeerEncTable entry with the same
                        index as the mioxPeerTable entry specifies
                        the call encapsulation types this PLE will
                        accept for peers not in the mioxPeerTable.
                        If the mioxPeerEncTable doesn't contain any
                        entries, this PLE will not accept calls from
                        entries not in the mioxPeerTable."
                ::= { mioxPleEntry 16 }



        -- ############################################################
        --              Peer Table
        -- ############################################################
```

```
        -- Systems that implement RFC 1356 must also implement
        -- all objects in this group.

        mioxPeerTable OBJECT-TYPE
                SYNTAX  SEQUENCE OF MioxPeerEntry
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "This table contains information about the
                        possible peers this machine may exchange
                        packets with."
                ::= { mioxPeer 1 }

        mioxPeerEntry OBJECT-TYPE
                SYNTAX  MioxPeerEntry
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "Per peer information."
                INDEX { mioxPeerIndex   }
                ::= { mioxPeerTable 1 }


        MioxPeerEntry ::= SEQUENCE {
                mioxPeerIndex
                        PositiveInteger,
                mioxPeerStatus
                        INTEGER,
                mioxPeerMaxCircuits
                        PositiveInteger,
                mioxPeerIfIndex
                        PositiveInteger,
                mioxPeerConnectSeconds
                        Counter,
                mioxPeerX25CallParamId
                        InstancePointer,
                mioxPeerEnAddr
                        OCTET STRING,
                mioxPeerX121Address
                        X121Address,
                mioxPeerX25CircuitId
                        InstancePointer,
                mioxPeerDescr
                        DisplayString
                }

        mioxPeerIndex   OBJECT-TYPE
                SYNTAX  PositiveInteger
```

```
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "An index value that distinguished one entry
                        from another.  This index is independent of
                        any other index."
                ::= { mioxPeerEntry 1 }

        -- Systems can claim conformance with this MIB without
        -- implementing sets to mioxPeerStatus with a value of
        -- clearCall or makeCall.
        -- All other defined values must be accepted.
        -- Implementors should realize that allowing these values
        -- provides richer management, and implementations
        -- are encouraged to accept these values.
        mioxPeerStatus OBJECT-TYPE
                SYNTAX  INTEGER {
                                valid (1),
                                createRequest (2),
                                underCreation (3),
                                invalid (4),
                                clearCall (5),
                                makeCall (6)
                                }
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "This reports the status of a peer entry.
                        A value of valid indicates a normal entry
                        that is in use by the agent.  A value of
                        underCreation indicates a newly created
                        entry which isn't yet in use because the
                        creating management station is still setting
                        values.

                        The value of invalid indicates the entry is
                        no longer in use and the agent is free to
                        delete the entry at any time.  A management
                        station is also free to use an entry in the
                        invalid state.

                        Entries are created by setting a value of
                        createRequest.  Only non-existent or invalid
                        entries can be set to createRequest.  Upon
                        receiving a valid createRequest, the agent
                        will create an entry in the underCreation
                        state.  This object can not be set to a
                        value of underCreation directly, entries can
```

only be created by setting a value of createRequest. Entries that exist in other than the invalid state can not be set to createRequest.

Entries with a value of underCreation are not used by the system and the management station can change the values of other objects in the table entry. Management stations should also remember to configure values in the mioxPeerEncTable with the same peer index value as this peer entry.

An entry in the underCreation state can be set to valid or invalid. Entries in the underCreation state will stay in that state until 1) the agent times them out, 2) they are set to valid, 3) they are set to invalid. If an agent notices an entry has been in the underCreation state for an abnormally long time, it may decide the management station has failed and invalidate the entry. A prudent agent will understand that the management station may need to wait for human input and will allow for that possibility in its determination of this abnormally long period.

Once a management station has completed all fields of an entry, it will set a value of valid. This causes the entry to be activated.

Entries in the valid state may also be set to makeCall or clearCall to make or clear X.25 calls to the peer. After such a set request the entry will still be in the valid state. Setting a value of makeCall causes the agent to initiate an X.25 call request to the peer specified by the entry. Setting a value of clearCall causes the agent to initiate clearing one X.25 call present to the peer. Each set request will initiate another call or clear request (up to the maximum allowed); this means that management stations that fail to get a response to a set request should query to see if a call was in fact placed or cleared before

```
                        retrying the request.  Entries not in the
                        valid state can not be set to makeCall or
                        clearCall.

                        The values of makeCall and clearCall provide
                        for circuit control on devices which perform
                        Ethernet Bridging using static circuit
                        assignment without address recognition;
                        other devices which dynamically place calls
                        based on destination addresses may reject
                        such requests.

                        An agent that (re)creates a new entry
                        because of a set with createRequest, should
                        also (re)create a mioxPeerEncTable entry
                        with a mioxPeerEncIndex of 1, and a
                        mioxPeerEncType of 204 (hex CC)."
                ::= { mioxPeerEntry 2 }

        mioxPeerMaxCircuits OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS    mandatory
                DESCRIPTION
                        "The maximum number of X.25 circuits allowed
                        to this peer."
                DEFVAL { 1 }
                ::= { mioxPeerEntry 3 }

        mioxPeerIfIndex OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The value of the ifIndex object for the
                        interface to X.25 to use to call the peer."
                DEFVAL { 1 }
                ::= { mioxPeerEntry 4 }

        mioxPeerConnectSeconds OBJECT-TYPE
                SYNTAX  Counter
                ACCESS  read-only
                STATUS  mandatory
                DESCRIPTION
                        "The number of seconds a call to this peer
                        was active.  This counter will be
                        incremented by one for every second a
                        connection to a peer was open.  If two calls
```

```
                        are open at the same time, one second of
                        elapsed real time will results in two
                        seconds of connect time."
                ::= { mioxPeerEntry 5 }

        mioxPeerX25CallParamId OBJECT-TYPE
                SYNTAX  InstancePointer
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The instance of the index object in the
                        x25CallParmTable from RFC 1382 for the X.25
                        call parameters used to communicate with the
                        remote host.  The well known value {0 0}
                        indicates no call parameters specified."
                DEFVAL { {0 0} }
                ::= { mioxPeerEntry 6 }

        mioxPeerEnAddr  OBJECT-TYPE
                SYNTAX    OCTET STRING (SIZE (0..128))
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The Encapsulation address of the remote
                        host mapped by this table entry.  A length
                        of zero indicates the remote IP address is
                        unknown or unspecified for use as a PLE
                        default.

                        The first octet of this object contains the
                        encapsulation type, the remaining octets
                        contain an address of that type.  Thus for
                        an IP address, the length will be five
                        octets, the first octet will contain 204
                        (hex CC), and the last four octets will
                        contain the IP address.  For a snap
                        encapsulation, the first byte would be 128
                        (hex 80) and the rest of the octet string
                        would have the snap header."
                DEFVAL { ''h }
                ::= { mioxPeerEntry 7 }

        mioxPeerX121Address OBJECT-TYPE
                SYNTAX  X121Address
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The X.25 address of the remote host mapped
```

```
                        by this table entry.  A zero length string
                        indicates the X.25 address is unspecified
                        for use as the PLE default."
                ::= { mioxPeerEntry 8 }

        -- Systems can claim conformance to this MIB without
        -- implementing sets to mioxPeerX25CircuitId.
        -- However systems that use PVCs with RFC1356
        -- are encouraged to implement sets.
        mioxPeerX25CircuitId OBJECT-TYPE
                SYNTAX  InstancePointer
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "This object identifies the instance of the
                        index for the X.25 circuit open to the peer
                        mapped by this table entry.  The well known
                        value {0 0} indicates no connection
                        currently active.  For multiple connections,
                        this identifies the index of a multiplexing
                        table entry for the connections.  This can
                        only be written to configure use of PVCs
                        which means the identified circuit table
                        entry for a write must be a PVC."
                DEFVAL { {0 0} }
                ::= { mioxPeerEntry 9 }

        mioxPeerDescr   OBJECT-TYPE
                SYNTAX  DisplayString (SIZE (0..255))
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "This object returns any identification
                        information about the peer.  An agent may
                        supply the comment information found in the
                        configuration file entry for this peer.  A
                        zero length string indicates no information
                        available."
                DEFVAL { ''h }
                ::= { mioxPeerEntry 10 }



        -- ###############################################################
        --              Peer Encapsulation Table
        -- ###############################################################
```

```
        mioxPeerEncTable OBJECT-TYPE
                SYNTAX  SEQUENCE OF MioxPeerEncEntry
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "This table contains the list of
                        encapsulations used to communicate with a
                        peer.  This table has two indexes, the first
                        identifies the peer, the second
                        distinguishes encapsulation types.

                        The first index identifies the corresponding
                        entry in the mioxPeerTable.  The second
                        index gives the priority of the different
                        encapsulations.

                        The encapsulation types are ordered in
                        priority order.  For calling a peer, the
                        first entry (mioxPeerEncIndex of 1) is tried
                        first.  If the call doesn't succeed because
                        the remote host clears the call due to
                        incompatible call user data, the next entry
                        in the list is tried.  Each entry is tried
                        until the list is exhausted.

                        For answering a call, the encapsulation type
                        requested by the peer must be found the list
                        or the call will be refused.  If there are
                        no entries in this table for a peer, all
                        call requests from the peer will be refused.

                        Objects in this table can only be set when
                        the mioxPeerStatus object with the same
                        index has a value of underCreation.  When
                        that status object is set to invalid and
                        deleted, the entry in this table with that
                        peer index must also be deleted."
                ::= { mioxPeer 2 }

        mioxPeerEncEntry OBJECT-TYPE
                SYNTAX  MioxPeerEncEntry
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "Per connection information."
                INDEX { mioxPeerIndex, mioxPeerEncIndex}
                ::= { mioxPeerEncTable 1 }
```

```
        MioxPeerEncEntry ::= SEQUENCE {
                mioxPeerEncIndex
                        PositiveInteger,
                mioxPeerEncType
                        INTEGER
                }

        mioxPeerEncIndex        OBJECT-TYPE
                SYNTAX  PositiveInteger
                ACCESS  read-only
                STATUS    mandatory
                DESCRIPTION
                        "The second index in the table which
                        distinguishes different encapsulation
                        types."
                ::= { mioxPeerEncEntry 1 }

        mioxPeerEncType OBJECT-TYPE
                SYNTAX  INTEGER (0..256)
                ACCESS  read-write
                STATUS  mandatory
                DESCRIPTION
                        "The value of the encapsulation type.  For
                        IP encapsulation this will have a value of
                        204 (hex CC).  For SNAP encapsulated
                        packets, this will have a value of 128 (hex
                        80).  For CLNP, ISO 8473, this will have a
                        value of 129 (hex 81).  For ES-ES, ISO 9542,
                        this will have a value of 130 (hex 82).  A
                        value of 197 (hex C5) identifies the Blacker
                        X.25 encapsulation.  A value of 0,
                        identifies the Null encapsulation.

                        This value can only be written when the
                        mioxPeerStatus object with the same
                        mioxPeerIndex has a value of underCreation.
                        Setting this object to a value of 256
                        deletes the entry.  When deleting an entry,
                        all other entries in the mioxPeerEncTable
                        with the same mioxPeerIndex and with an
                        mioxPeerEncIndex higher then the deleted
                        entry, will all have their mioxPeerEncIndex
                        values decremented by one."
                ::= { mioxPeerEncEntry 2 }

        -- ##############################################################

        END
```

5. Acknowledgements

This document was produced by the x25mib working group:

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Art Berggreen, ACC
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7. Security Considerations

Security issues are not discussed in this memo.

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